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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/687,425

10/16/2003

Jeffrey Eldon Fish

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DORITY & MANNING, P.A.  
POST OFFICE BOX 1449  
GREENVILLE, SC 29602-1449

EXAMINER

SASAN, ARADHANA

ART UNIT

PAPER NUMBER

1615

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/687,425	<b>Applicant(s)</b> FISH ET AL.	
	<b>Examiner</b> ARADHANA SASAN	<b>Art Unit</b> 1615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 30 April 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 56-63, 67-77 and 79-88 is/are pending in the application.
- 4a) Of the above claim(s) 77, 79 and 80 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 56-63, 67-76 and 81-88 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Status of Application***

1. The remarks and amendments filed on 04/30/09 are acknowledged.
2. Claims 1-55, 64-66, and 78 were cancelled. Claims 77 and 79-80 were withdrawn from consideration. Claims 56, 76 and 84 were amended. New claim 88 was added.
3. Claims 56-63, 67-77 and 81-88 are included in the prosecution.

### **MAINTAINED REJECTIONS:**

The following is a list of maintained rejections:

#### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 56-63, 67-73, and 84-88 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morman et al. (US 2002/0004350 A1) in view of Rohrbaugh et al. (US 2002/0151634 A1).

The claimed invention is a breathable film comprising a blend of a thermoplastic polymer and a filler blended with silica nanoparticles, wherein the silica nanoparticles have a diameter of about 500 nanometers or less and a negative first Zeta Potential from about -1 to about -50 millivolts. The silica nanoparticles are modified with a metal ion to form modified silica nanoparticles, the metal ion is selected from the group

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consisting of copper ion, silver ion, gold ion, iron ion, and combinations thereof. The modified silica nanoparticles comprise a second Zeta Potential being at least about 5.0 millivolts higher than the negative first Zeta Potential.

Morman teaches a breathable film that is used in a variety of personal care garments and protective garments (Abstract). Morman defines the term “breathable film” as a film having a water vapor transmission rate (“WVTR”) of at least about 500 grams/m<sup>2</sup> – 24 hours (Page 2, [0017]). Morman discloses that the term “film” refers to a thermoplastic film and includes films rendered microporous by mixing polymer with filler, forming a film from the mixture, and stretching the film (Page 3, [0023]). Morman also teaches laminates that are breathable to water vapor but substantially impermeable to liquid water are used in diaper backings and other personal care absorbent garments (Page 1, [0002]). Thermoplastic polymers such as polyolefins are disclosed (Page 4, [0042]). Filler particles including calcium carbonate, silica and alumina are disclosed (Page 5, [0049]). Example 1 discloses a film where the core layer contained 58% by weight of stearic acid coated calcium carbonate particles having a mean diameter of about 1 micron and a top cut of 7 microns (Page 9, [0088]).

Morman does not expressly teach nanoparticles blended with the thermoplastic polymer and filler.

Rohrbaugh teaches coating compositions comprising a nanoparticle system and articles of manufacture that create multi-use benefits to the modified surfaces including malodor control (Abstract). The soft surfaces that are coated include fabrics, such as nonwoven fabrics, garments, textiles and films (Page 2, [0025]). The soft surfaces may comprise fibers from mineral sources such as polyolefin fibers (Page 2, [0026]).

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Nonwoven fabrics are disclosed (Page 3, [0030] to [0031]). The nanoparticle diameter can be between 0nm and 750nm (Page 5, [0044]). It is also disclosed that inorganic nanoparticles generally exist as silicates (Page 5, [0046]). Surface molecules can be associated with surfaces of the nanoparticles (Page 5, [0045]). The surface of the nanoparticles may be “functionalized” by the association with charged functionalized surface molecules including multi-valent inorganic salts (such as salts of  $\text{Cu}^{+2}$ ) (Page 8, [0069]). It is also disclosed that “the materials that have been subjected to a high energy surface treatment and have a plurality of nanoparticles deposited thereon can be suitable for a great many uses including, but not limited to use to transport liquid in articles such as clothing containing hydrophobic or borderline hydrophilic fibers and in portions of disposable absorbent articles” (Page 14, [0139]). Examples 14-15 and 20-21 include nanoparticle coating compositions (Page 19, Tables 2 and 4).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to make a breathable film that is used in a variety of personal care garments and protective garments, as suggested by Morman, combine it with the use of modified silica nanoparticles in coating polyolefin fibers that are used in disposable absorbent articles, as suggested by Rohrbaugh, and produce the instant invention.

One of ordinary skill in the art would do this because Rohrbaugh teaches that articles of manufacture comprising a nanoparticle coating have multi-use benefits to the modified surfaces including malodor control (Abstract).

Regarding instant claim 56, the limitation of a breathable film would have been obvious over the breathable film taught by Morman (Abstract). The limitation of a blend

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of a thermoplastic polymer, a filler, and nanoparticles would have been obvious over the thermoplastic films made by mixing a thermoplastic polymer with filler, as taught by Morman (Page 3, [0023]) in view of the nanoparticle coating of soft surfaces such as polyolefin fibers, as taught by Rohrbaugh (Page 2, [0026]). The limitation of the diameter of the nanoparticles (500nm) would have been obvious over the nanoparticle diameter between 0nm and 750nm, as taught by Rohrbaugh (Page 5, [0044]). The limitation of the nanoparticles selected from the group consisting of silica, alumina, titanium dioxide, gold, zinc oxide, polystyrene, and combinations thereof would have been obvious over the silicate nanoparticles taught by Rohrbaugh (Page 5, [0046]). The limitation of the nanoparticles modified with a metal ion would have been obvious over the surface of the nanoparticles that may be "functionalized" by the association with charged functionalized surface molecules including multi-valent inorganic salts, as taught by Rohrbaugh (Page 8, [0069]). The limitation of the modified nanoparticles comprising a negative first Zeta Potential from about -1 to about - 50 millivolts and a second Zeta Potential being at least about 5.0 millivolts higher than the negative first Zeta Potential would have been obvious over the silica nanoparticles taught by Rohrbaugh (Page 5, [0046]) because silica nanoparticles have a negative surface charge (Rohrbaugh, Page 6, [0049]) and therefore have a negative electrical potential or zeta potential. It is this negative surface charge or negative zeta potential that allows the silica nanoparticles to be associated or modified by a positively charged metal ion such as  $\text{Cu}^{2+}$ , which is taught by Rohrbaugh (Page 8, [0069]). The limitation of the range of the negative first zeta potential (claims 34-35) would have been obvious given the desired association with a metal ion. The limitation of a second zeta potential that is

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higher than the first zeta potential would have been obvious because once a positively charged metal ion modifies the surface of the nanoparticle, the first negative zeta potential will consequently be higher, depending on the desired amount of modification or addition of positively charged metal ions. Rohrbaugh teaches that "inorganic nanoparticles are common to consumer applications. Inorganic nanoparticles generally exist as oxides, silicates, carbonates and hydroxides. Some ... inorganic metal oxides can be examples of nanoparticles" (Pages 5-6, [0046]). Rohrbaugh further teaches that "the inorganic metal oxides used in the composition may be silica- or alumina- based nanoparticles that are naturally occurring or synthetic" (Page 7, [0061]). Therefore, the limitation of the silica nanoparticles in amended claim 56 is taught by Rohrbaugh. The limitation of a blend of polymer, filler and nanoparticles would have been obvious over the thermoplastic films made by mixing a thermoplastic polymer with filler as taught by Morman (Page 3, [0023]). One of ordinary skill in the art would find it obvious to blend the nanoparticles of Rohrbaugh in the mixture of thermoplastic polymer and filler of Morman because Rohrbaugh teaches that "the materials that have been subjected to a high energy surface treatment and have a plurality of nanoparticles deposited thereon can be suitable for a great many uses including, but not limited to use to transport liquid in articles such as clothing containing hydrophobic or borderline hydrophilic fibers and in portions of disposable absorbent articles (Page 14, [0139]).

Regarding instant claims 57-58, the limitations of the filler comprising at least 35% by weight of the breathable film and the filler comprising from about 45% to about 65% by weight of the breathable film would have been obvious over the 10-55% by volume of the filler, as taught by Morman (Page 11, claim 10). One with ordinary skill in

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the art would convert the % by volume of the filler into % by weight of the filler (based on the density of the filler) during the process of routine experimentation.

Regarding instant claim 59, the limitation of the average particle size of the filler of about 0.1 microns to about 10 microns would have been obvious over the mean particle diameter of the filler particles of about 0.1-7.0 microns, as taught by Morman (Page 5, [0049]).

Regarding instant claim 60, the limitation of the filler coated with a fatty acid would have been obvious over the stearic acid coated calcium carbonate particles, as taught by Morman (Page 9, Example 1, [0088]).

Regarding instant claims 61-62, the limitation of the filler would have been obvious over the fillers such as calcium carbonate, non-swellable clays, silica, alumina, barium sulfate, etc., as taught by Morman (Page 5, [0049]).

Regarding instant claim 63, the limitation of the negative first zeta potential of the nanoparticles from about -1 to about -20 millivolts would have been obvious over the silica nanoparticles taught by Rohrbaugh (Page 5, [0046]) because silica nanoparticles have a negative surface charge (Rohrbaugh, Page 6, [0049]) and therefore have a negative electrical potential or zeta potential. It is this negative surface charge or negative zeta potential that allows the silica nanoparticles to be associated or modified by a positively charged metal ion such as  $\text{Cu}^{2+}$ , which is taught by Rohrbaugh (Page 8, [0069]). The limitation of the range of the negative first zeta potential of about -1 to about -20 millivolts would have been obvious given the desired association with a metal ion.

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Regarding instant claims 67-68, the limitation of the WVTR of the breathable film would have been obvious over the breathable film having a water vapor transmission rate ("WVTR") of at least about 500 grams/m<sup>2</sup> – 24 hours, as taught by Morman (Page 2, [0017]).

Regarding instant claims 69-71, the limitation of the surface area of the nanoparticles would have been obvious over the nanoparticles with a diameter between 0nm and 750nm, as taught by Rohrbaugh (Page 5, [0044]). The surface area is an inherent property of the nanoparticle and since the diameter of the nanoparticles is taught, the surface area of the nanoparticle is implicitly taught by Rohrbaugh. One with ordinary skill in the art would be able to calculate the surface area of the nanoparticles when the diameter of the nanoparticles is known.

Regarding instant claim 72, the limitation of a polyolefin as the thermoplastic polymer would have been obvious over the thermoplastic polymers such as polyolefins, as disclosed by Morman (Page 4, [0042]).

Regarding instant claim 73, the limitation of metal ions adsorbed onto the nanoparticles would have been obvious over the Cu<sup>+2</sup> used on the surface of the nanoparticles as taught by Rohrbaugh (Page 8, [0069]).

Regarding instant claims 84-87, the limitation of a personal care product would have been obvious over the disposable absorbent articles taught by Rohrbaugh (Page 14, [0139]) and by the personal care absorbent articles and protective garments such as disposable diapers taught by Morman (Page 1, [0007]). The limitation of a nonwoven

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fabric laminated to the film would have been obvious over the non-woven web that is bonded to the breathable film, as taught by Mormon (Page 1, [0006]).

Regarding instant claim 88, the limitation of coextruding the thermoplastic polymer with the blend of filler and silica nanoparticles would have been obvious over the mixture of polymer and filler that is extruded into a film, as taught by Morman (Page 3, [0024]).

### ***Response to Arguments***

6. Applicants' arguments, see Page 6, filed 04/30/09, with respect to the rejection of claims 56-63, 65-73, and 84-87 under 35 U.S.C. 103(a) as being unpatentable over Morman et al. (US 2002/0004350 A1) in view of Rohrbaugh et al. (US 2002/0151634 A1) have been fully considered but are not persuasive.

Applicants argue that Rohrbaugh fails to teach or suggest the limitation of independent claim 6 which requires silica nanoparticles with a negative first Zeta Potential from about -1 to about -50 millivolts and, upon modification with a copper ion, a second Zeta Potential at least 5.0 millivolts higher than the first Zeta Potential. Applicants argue that "silicate" may not be equated with silica ( $\text{SiO}_2$ ). Applicants argue that even if silicate were equated with silica, the claims [require] a metal ion selected from copper ion, silver ion, gold ion, iron ion, and combinations thereof and that Rohrbaugh discloses neutralization with alkali metal cations and/or alkaline earth metal cations.

This is not persuasive because Rohrbaugh teaches that "the inorganic metal oxides used in the composition may be silica- or alumina- based nanoparticles that are

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naturally occurring or synthetic” (Page 7, [0061]). Furthermore, Rohrbaugh teaches that the surface of the nanoparticles may be “functionalized” by the association with charged functionalized surface molecules including multi-valent inorganic salts (such as salts of  $\text{Cu}^{+2}$ ) (Page 8, [0069]). Therefore, the limitations of silica nanoparticles and copper ions on the surface of the nanoparticles are taught by Rohrbaugh.

Applicants argue that to establish inherency, the evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill.

However, Rohrbaugh teaches the limitations of silica nanoparticles and surface modification by ions including copper ions. The Zeta potential (first and second Zeta Potential) of the nanoparticles is a property associated with the nanoparticles and is inseparable from the nanoparticles. “Products of identical chemical composition can not have mutually exclusive properties.” A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present. In re Spada, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). Please see MPEP 2112.01. Also, the teaching of Rohrbaugh is used in combination with Morman for an obviousness type rejection.

Applicants argue that one skilled in the art would not blend filler components (e.g., calcium carbonate (claim 62)) with the nanoparticles from the coating of Rohrbaugh.

This is not persuasive because the primary reference, Morman, teaches thermoplastic films made by mixing a thermoplastic polymer with filler (Page 3, [0023]).

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One of ordinary skill in the art would find it obvious to blend the nanoparticles of Rohrbaugh in the mixture of thermoplastic polymer and filler of Morman because Rohrbaugh teaches that "the materials that have been subjected to a high energy surface treatment and have a plurality of nanoparticles deposited thereon can be suitable for a great many uses including, but not limited to use to transport liquid in articles such as clothing containing hydrophobic or borderline hydrophilic fibers and in portions of disposable absorbent articles (Page 14, [0139]).

Applicants argue that any modification of the cited references relies on the impermissible use of hindsight, which cannot be successfully used to support a *prima facie* case of obviousness.

It must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Therefore, the rejection of 03/30/09 is maintained.

7. Claims 74-75 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morman et al. (US 2002/0004350 A1) in view of Rohrbaugh et al. (US 2002/0151634 A1) and Thunhorst et al. (US 2002/0022672 A1).

The teachings of Morman and Rohrbaugh are stated above.

Morman and Rohrbaugh do not expressly teach the bonding of metal ions to the nanoparticles or the coupling of metal ions to the nanoparticles with an organofunctional silane.

Thunhorst teaches that the surface of silica nanoparticles can be treated with organosilanes, which are capable of attaching to the surface of the particles by a chemical bond or by a strong physical bond (Page 6, [0094]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to make a breathable film that is used in a variety of personal care garments and protective garments, as suggested by Morman, combine it with the use of modified silica nanoparticles in coating polyolefin fibers that are used in disposable absorbent articles, as suggested by Rohrbaugh, further combine it with the surface treatment of silica nanoparticles with organosilanes, as taught by Thunhorst, and produce the instant invention.

One of ordinary skill in the art would do this because Thunhorst teaches that organosilanes are preferred for surface treatment of silica nanoparticles (Page 6, [0094]).

Regarding instant claims 74-75, the limitation of the bonding of metal ions to the nanoparticles and the coupling of metal ions to the nanoparticles with an organofunctional silane would have been obvious over the surface treatment of silica nanoparticles with organosilanes, which are capable of attaching to the surface of the particles by a chemical bond or by a strong physical bond, as taught by Thunhorst (Page 6, [0094]).

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8. Claims 76 and 81-83 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morman et al. (US 2002/0004350 A1) in view of Rohrbaugh et al. (US 2002/0151634 A1) and Fernandez et al. (US 2001/0051189 A1).

The teachings of Morman and Rohrbaugh are stated above.

Morman and Rohrbaugh do not expressly teach a positive first Zeta potential of the modified nanoparticles.

Alonso Fernandez teaches nanoparticles with a positive electrical charge (Page 4, claims 1-2).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to make a breathable film that is used in a variety of personal care garments and protective garments, as suggested by Morman, combine it with the use of modified silica nanoparticles in coating polyolefin fibers that are used in disposable absorbent articles, as suggested by Rohrbaugh, further combine it with the positively charged nanoparticles, as taught by Alonso Fernandez, and produce the instant invention.

One of ordinary skill in the art would do this because one of ordinary skill in the art would choose from a finite number of predictable positively charged nanoparticles, such as the chitosan nanoparticles taught by Alonso Fernandez, with a reasonable expectation of success of producing a functional product that is a modified nanoparticle with a positive first Zeta potential.

Regarding instant claim 76, the limitation of the modified nanoparticles comprising a positive first Zeta potential from about 1 to about 70 millivolts would have

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been obvious over the nanoparticles taught by Rohrbaugh (Page 8, [0069]) in view of the positively charged nanoparticles taught by Alonso Fernandez (Page 4, claims 1-2).

Regarding instant claim 81, the limitation of metal ions adsorbed onto the nanoparticles would have been obvious over the  $\text{Cu}^{+2}$  used on the surface of the nanoparticles as taught by Rohrbaugh (Page 8, [0069]).

Regarding instant claims 82-83, the limitation of the bonding of metal ions to the nanoparticles and the coupling of metal ions to the nanoparticles with an organofunctional silane would have been obvious over the surface treatment of silica nanoparticles with organosilanes, which are capable of attaching to the surface of the particles by a chemical bond or by a strong physical bond, as taught by Thunhorst (Page 6, [0094]).

### ***Response to Arguments***

9. Applicants' arguments, see Page 9, filed 04/30/09, with respect to the rejection of claims 76-77 and 81-83 under 35 U.S.C. 103(a) as being unpatentable over Morman et al. (US 2002/0004350 A1) in view of Rohrbaugh et al. (US 2002/0151634 A1) and Fernandez et al. (US 2001/0051189 A1) have been fully considered but are not persuasive.

Applicants argue that Fernandez is directed to pharmaceutical compositions and that one of ordinary skill in the art would not look to pharmaceutical compositions useful for the delivery of high molecular weight compounds in order to control odor in personal absorbent articles. Applicants argue that any modification of the cited references relies

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on the impermissible use of hindsight, which cannot be successfully used to support a *prima facie* case of obviousness.

This is not persuasive because one of ordinary skill in the art would find it obvious to try various nanoparticles in the combination of Morman and Rohrbaugh. One of ordinary skill in the art would find it obvious to choose from a finite number of charged nanoparticles in the combination with a reasonable expectation of success in producing a functional product that is a modified nanoparticle and that can be used in a film composition. Please see MPEP 2141. It must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Applicants assert that “effective electrical charge” is not ionic charge as asserted by Examiner. Applicants refer to the instant specification (Page 11, line 30 to Page 12, line 14) and to the figure available at <http://www.scielo.br/img/fbpe/aabc/v74n4/a07fig02.gif> to illustrate what zeta potential is. Applicants state that the zeta potential is the electrokinetic potential not the ionic charge.

This is not persuasive because one of ordinary skill in the art would know that the zeta potential of a particle or nanoparticle is a physical property of the nanoparticle as it is suspended. One of ordinary skill in the art would be able to determine the zeta potential of the silica nanoparticles (as taught by Rohrbaugh) (in a solution or suspension) during the process of routine experimentation. One of ordinary skill in the

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art would find it obvious to try various nanoparticles in the combination of Morman and Rohrbaugh, such as the nanoparticles taught by Fernandez. The examiner acknowledges that the zeta potential is the electrokinetic potential. However, the zeta potential determination can be carried out by one of ordinary skill in the art and a physical property (such as zeta potential) cannot be separated from the composition itself (i.e., the nanoparticles).

Moreover, one of ordinary skill in the art would know that zeta potential can be affected by various factors. According to Reyerson et al. (The electrokinetic potentials of precipitates, J. Phys. Chem., 1947, 51 (1), pp 321-332), barium sulfate particles had a negative zeta potential in water (Page 325), a positive zeta potential in 50% ethanol and the negative potential was increased by adding lithium sulfates (Page 326). Therefore, according to Reyerson, various factors, including electrolytes, solvent, and aging all affect the zeta potential and can change its value from negative to positive. Therefore, the recited first and second zeta potential values would have been obvious to one of ordinary skill in the art.

Therefore, the rejection of 03/30/09 is maintained.

### ***Double Patenting***

10. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422

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F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a

terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

11. Claims 56, 69-71, and 84-87 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 31, 36, 43, and 45 of copending Application No. 10/686,933 ('933 hereinafter).

Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 31-32, 34, 36, 43, and 45 of '933 are drawn to an absorbent article comprising a porous substrate which further contains nanoparticles formed from silica, having an average size of from about 1 to about 50 nanometers, and a surface area of from about 50 to about 1000 square meters per gram. The difference is that the claims of '933 do not include the metal ion in addition to the silica nanoparticles for odor absorption.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the absorbent article comprising silica nanoparticles of '933 and produce the instant invention.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

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12. Claims 56, 69-71, and 84-87 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-3, 6-9, 14-15, 17, 19-22, 25-26, 29-30, and 34-35 of U.S. Patent No. 7,141,518 ('518 hereinafter).

Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 1-3, 6-9, 14-15, 17, 19-22, 25-26, 29-30, and 34-35 of '518 are drawn to a substrate comprising nanoparticles having a surface area of at least about 50 square meters per gram, the nanoparticles are modified with a metal ion and have a negative zeta potential prior to modification with the metal ion, the zeta potential of the modified nanoparticles is greater than the zeta potential of the nanoparticles prior to the modification, the substrate contains polyolefin fibers, a personal care product comprising the substrate and protective barrier clothing. The Specification of '518 discloses: "Laminates of breathable films and nonwoven fabrics also are considered to be within the teachings of this invention provided at least one of the layers contains absorbing, high surface area materials" (Col. 3, lines 27-30).

Since the instant application claims a film comprising high surface area silica nanoparticles with a metal ion, with zeta potential higher after the metal ion was adsorbed on the surface of the nanoparticle, used in a personal care product such as a diaper or adult incontinence product it is obvious over the claims of '518 and thus they are not patentably distinct over each other.

### ***Response to Arguments***

13. Applicants' arguments, see Page 12, filed 04/30/09 12/31/08, with respect to the provisional rejection of claims 56, 69-71, and 84-87 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 31-32, 34, 36,

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43, and 45 of copending Application No. 10/686,933 ('933 hereinafter), and the rejection of claims 56, 69-71, and 84-87 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-3, 6-9, 14-15, 17, 19-22, 25-26, 29-30 and 34-35 of US 7,141,518 have been fully considered. Applicants agree to submitting terminal disclaimers for the above references at a time when the present application is otherwise in condition for allowance.

Until such time, the obviousness-type double patenting rejections of 03/30/09 will be maintained.

**New claim 88**

14. The rejection of new claim 88 was necessitated by Applicants' amendment.

***Conclusion***

15. No claims are allowed.

16. Since the new rejection of claim 88 was necessitated by applicant's amendment,

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aradhana Sasan whose telephone number is (571) 272-9022. The examiner can normally be reached Monday to Thursday from 6:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Woodward, can be reached at 571-272-8373. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Aradhana Sasan/  
Examiner, Art Unit 1615

/MP WOODWARD/  
Supervisory Patent Examiner, Art Unit 1615